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PCT/032005/001490



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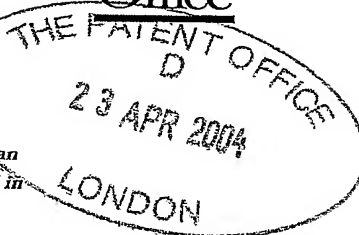
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(The Patent Office will fill in this part) 0409111.2 23 APR 2004
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Huntleigh Technology PLC
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Patents ADP number (if you know it) 00506907001
If the applicant is a corporate body, give the country/state of its incorporation United Kingdom
4. Title of the invention Bed
5. Name of your agent (if you have one)
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Group IP Department
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Luton
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Patents Form 1/77

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Description 4

Claim(s)

Abstract -

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8

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Priority documents -

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Statement of inventorship and right to grant of a patent (Patents Form 7/77) -

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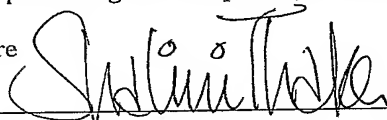
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11.

I/We request the grant of a patent on the basis of this application.

Signature



Date 22 April 2004

12. Name and daytime telephone number of person to contact in the United Kingdom

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Bed

The proposed invention relates to a profiling of a bed, in particular the manner in which the mattress sections, of an electrically operated bed, profile in relation to one another.

Conventionally, when a bed is adjusted with "auto-contour", the backrest and thigh sections of the mattress platform are driven simultaneously until they reach their fully raised end or fully lowered positions.

If the mattress platform sections begin from a flat condition then the patient is maintained in a relatively constant position, along the axis of the bed, as the sections profile.

However, when the bed is fully profiled and the "auto-contour" is used to flatten the sections, the backrest and thigh drive simultaneously until they reach their fully down end positions. However, because the thigh section has a smaller angle to travel through than the backrest, it will reach its fully down position much earlier. This means that as the backrest continues to lower, it will result in the patient being moved along the axis of the bed; again resulting in shear between the patient's skin and mattress surface.

Similarly, because of the simultaneous action of the thigh section in relation to the backrest, any reduction of the backrest angle using the "auto-contour" control will consequentially reduce the thigh section angle. Because of the higher angles achievable by the backrest, the thigh section may reach a flat position whilst the backrest is still in a relatively elevated position. This is undesirably as it could result in increased shear between the patients skin and the mattress surface.

The present invention seeks to make improvements. Accordingly, the present invention comprises actuator controls configured such that when the sections are

driven from a flat condition with "auto contour", the backrest and thigh sections move simultaneously, until they reach a substantially equivalent angle then the thigh section stops and the backrest continues to drive until it reaches its maximum condition wherein when the "auto-contour" control is then used to lower the sections, only the backrest will drive down until it reaches a substantially equivalent position to the thigh section at this point the thigh section will then begin to drive down simultaneously with the backrest. The present invention results in the patient being held in a relatively constant position, thereby reducing the shear between the patients skin and the mattress surface.

Preferably, any higher angles of profile result in adjustments only to the backrest, thereby maintaining the position of the patient relative to the axis of the bed. Advantageously, this form of control allows the majority of patients to use just the "auto contour" control to alter their position when in a profiled position. The present invention allows a simple "one button" adjustment of the profiled position, without the need for software within the control system, enabling a good profiling action to be attained at a very low cost.

The present invention will be described by way of example only, with reference to the following drawings, of which

Figure 1 shows a schematic view of the bed platform in a flat position;

Figure 2 shows a schematic view of the bed platform wherein the raised backrest and thigh-rest position are raised to equal angular; and

Figure 3 shows a schematic view of the bed platform where the backrest is raised further than in Figure 2. Referring to Figure 1, a bed 10 consists of a platform 20 comprising a backrest 21, seat section 22 and thigh section 23 and foot section 24.

Normally, electrically operated linear actuators, used for driving bed sections, only have two limit switches, one to detect their fully extended condition and one to detect their fully retracted condition. These
5 switches are used to sense the ends of travel of the actuator and interrupt electrical power to the motors.

The present invention includes a third integrated limit switch in the backrest actuator 41, partway between the two end of travel limit switches. This third limit
10 switch is positioned such that it is activated at the same point as the thigh actuator 42 reaches its fully extended position. The actuator controls are configured such that when the sections 21,23,24 are driven from a flat condition Figure 1 with "auto contour", the backrest
15 21 and thigh 23 sections move simultaneously, until they reach a substantially equivalent angle Figure 2. The thigh section 23 then stops and the backrest 21 continues to be driven by actuator 41 until it reaches its maximum condition Figure 3. If the "auto-contour" control is then
20 used to lower the sections, then only the backrest 21 will be driven down until it reaches a substantially equivalent position to the thigh section 23 in Figure 2. At this point the thigh section 23 will then begin to drive down simultaneously with the backrest 21. This will
25 result in the patient being held in a relatively constant position, thereby reducing the shear between the patients skin and the mattress surface.

At higher angles of profile any adjustments using the "auto-contour" control only results in adjustments to
30 the backrest 21, see Figure 3 thereby maintaining the position of the patient relative to the axis of the bed. This form of control allows the majority of patients to use just the "auto contour" control to alter their position when in a profiled position. In conventional
35 beds adjustment of the backrest would have to be performed using a separate control button. This preferred

arrangement allows a simple "one button" adjustment of the profiled position, without the need for software within the control system. This means that a good profiling action can be attained at a very low cost.

5 The arrangement incorporates a third limit switch within the backrest actuator 41 in a position that substantially equates to the fully extended position of the thigh actuator 42. The actuator controls are configured such that when the backrest actuator 41 is in
10 the zone between this limit switch and its fully extended limit switch, any adjustment of "auto contour" has no effect on the thigh section actuator 42. Thereby, the thigh section 23 remains in its fully raised position until the backrest 21 is lowered to a substantially
15 equivalent angle.

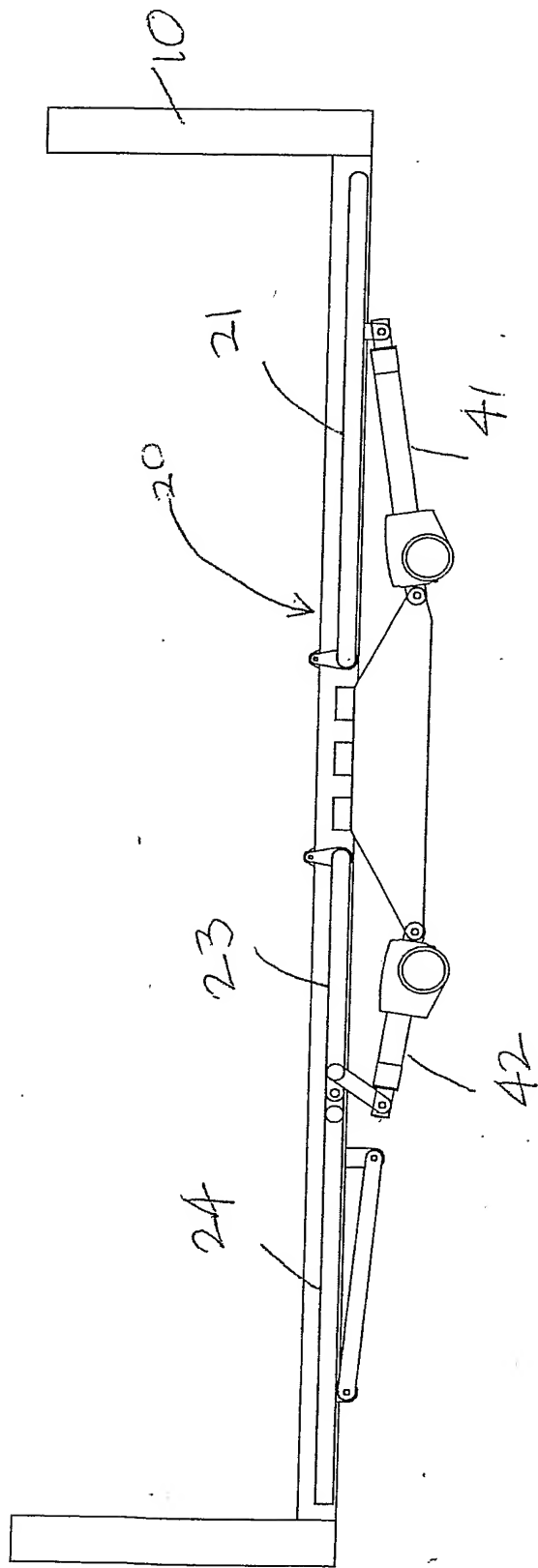
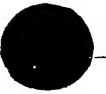


Figure 1



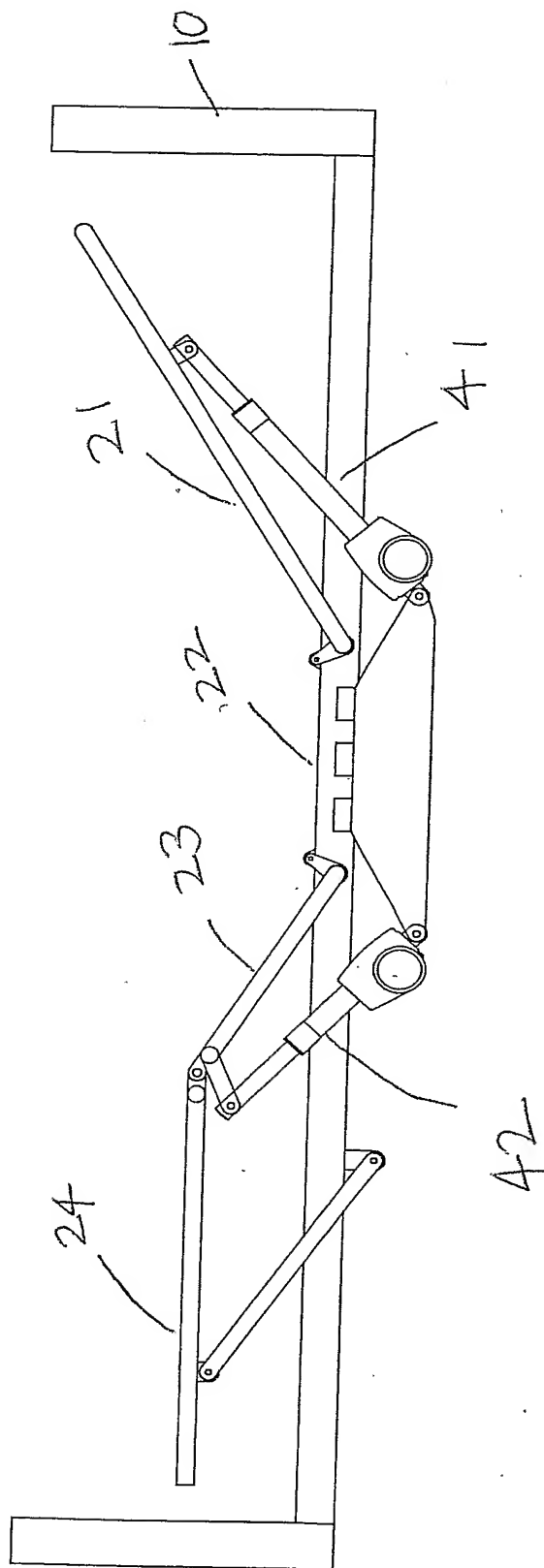


Figure 2



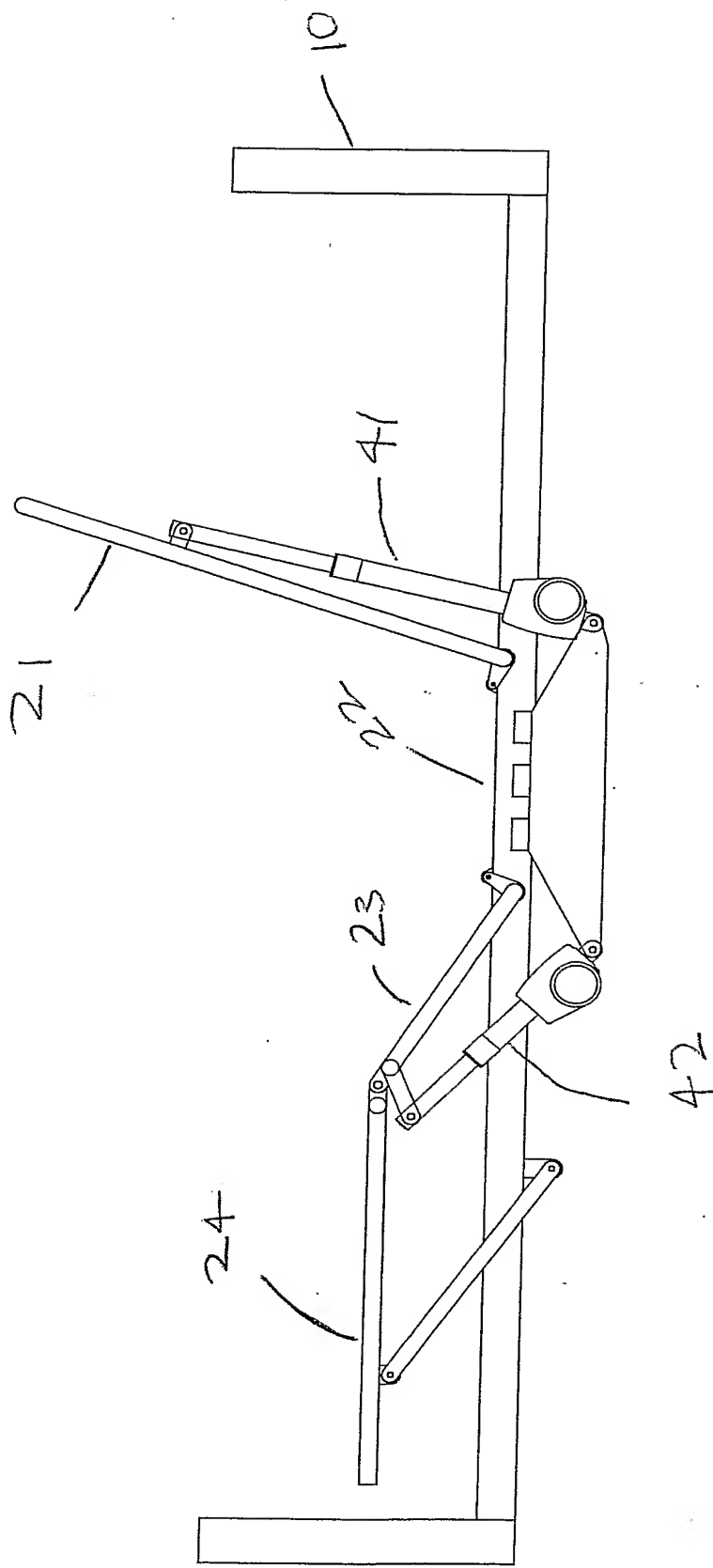


Figure 3

